Task Force/Group Definition

The definition proposed by the Task Force on Dyslexia (2001) and endorsed by the Northern Ireland Task Group (2002) incorporates a broad use of the term dyslexia:

Dyslexia is manifested in a continuum of specific learning difficulties related to the acquisition of basic skills in reading, spelling and/or writing, such difficulties being unexpected in relation to an individual's other abilities and educational experiences. Dyslexia can be described at the neurological, cognitive and behavioural levels. It is typically characterised by inefficient information processing, including difficulties in phonological processing, working memory, rapid naming and automaticity of basic skills. Difficulties in organisation, sequencing and motor skills may also be present.

In addition, the report recognises that the learning difficulties arising from dyslexia:

- occur across the lifespan, and may manifest themselves in different ways at different ages;
- may co-exist with difficulties in the area of number;
- may be associated with early spoken language difficulties;
- may be alleviated by appropriate intervention;
- increase or reduce in severity depending on environmental factors;
- occur in all socio-economic circumstances;
- co-exist with other learning difficulties such as Attention Deficit Disorder, and may or may not represent a primary difficulty.

Analysis of the definition:

1. Dyslexia is a continuum of specific learning difficulties manifested by problems in acquiring one or more basic skills (reading, spelling, writing, number), such problems being unexpected in relation to other abilities.

This sentence states that dyslexia occurs along a continuum in that the condition varies significantly between and within those affected by it. Some are affected mildly and, with minimal support within the mainstream classroom and at home, they can become successful readers, perhaps experiencing only minor continuing difficulties such as minor spelling errors. Others are affected to a moderate degree and require intensive intervention from a specialist teacher as well as differentiated support from the mainstream teacher and help at home. A final group experience significant learning difficulties and will be classed as having special educational needs. This group requires significant intervention over an extensive time period.

This sentence also highlights the fact that the individual will incur specific difficulties in acquiring a variety of literacy skills that are unexpected in relation to other assessed abilities. Identification is dependant on the existence of a discrepancy between assessed cognitive ability and literacy attainment.

2. Dyslexic difficulties can be described at the neurological, cognitive and behavioural levels.

This sentence makes reference to the fact that several fields of research are contributing to the

current knowledge of dyslexia, though it must be acknowledged that much remains to be learned.

- ***Behavioural Level***

Research and anecdotal evidence have suggested a number of behaviours that can be observed in people deemed to be dyslexic. These have led to the development of lists of indicators such as those reproduced in Section 2: Identifying Dyslexia. Such lists are useful for informal observation and to gather information to support a referral for assessment. They do not form the basis for a diagnosis of dyslexia and they do not help us understand the underlying cause(s).

- ***Cognitive Level***

Research in cognitive psychology investigates how deficits in cognitive skills such as perception, memory and attention impact on the individual's acquisition and use of literacy skills. Cognitive testing attempts to measure the extent of these deficits. This is the work of the educational psychologist who uses cognitive tests to identify specific cognitive deficits and strengths. Strengths may include skills in oral and creative language, mathematical conceptualisation, visual-spatial and/or lateral and global thinking skills and mechanical, artistic and/or musical ability. Weaknesses may occur in areas such as working memory, phonological processing and rapid naming. Some people with dyslexia also possess good interpersonal or intrapersonal skills and remarkable persistence, task commitment and endurance.

- ***Neurological Level***

At the neurological level, dyslexia is considered to arise from differences in brain functioning, with some genetic predisposition. Biologists, neurologists and geneticists have conducted research into dyslexia. This research suggests that dyslexia is a neurologically-based, familial disorder, indicating constitutional and biological origins for dyslexia. Genetic research has indicated that a combination of genes may account for a significant proportion of the difficulties associated with dyslexia. It has long been observed that dyslexia is congenital and that it runs in families, but now there is evidence that the phonological (speech sound) and orthographic (spelling pattern) skills contributing to reading are heritable.

There are significant variations in the brain functioning of individuals. Many of these individual differences appear to be related to environmental factors such as nutrition or the presence of toxins, but some of them seem to be related to genetic factors. These include predispositions to certain disorders such as dyslexia.

Biological conditions in interaction with the environment can have adverse effects on brain development causing developmental disorders. Research into the biological bases of dyslexia involves family studies, twin studies, linkage studies, gene identification, neuro-anatomical studies and functional imaging.

3. Dyslexic difficulties are typically characterised by inefficient information processing, including difficulties in phonological processing, working memory, rapid naming and automaticity of basic skills.

· **Information processing**

A characteristic of dyslexia is a slower rate of information processing. In the classroom, it can often seem that the pupil does not understand directions or know the answer to a question. Often it is just that the pupil requires more time than his/her peers to process that language and retrieve the appropriate answer or response from long term memory. This problem is less obvious but just as

handicapping as other dyslexic difficulties when the person is working independently in timed situations such as school or state examinations.

· **Phonological processing**

Phonology is the study of the sounds of words within a language. Phonological awareness is a language skill that is critically important in learning to read. It is defined as an explicit self-awareness of the phonological structure of the words in one's own spoken language. It involves the ability to notice, think about and manipulate the individual sounds or phonemes within words. A lack of phonological awareness and a difficulty with phonological processing are seen by many in this field as primary causes of dyslexia. Many children experience difficulty with rhyming activities as well as a difficulty in separating spoken words into sounds and blending spoken sounds to form words. Pupils with dyslexia often lack phonological skills at a critical time in learning to read. Studies have shown that an early phonological deficit is a strong predictor of later reading difficulties.

· **Working memory**

Memory per se is not usually a problem for pupils with dyslexia. However, pupils with dyslexia do tend to have an inefficient short term or working memory. The working memory system holds chunks of information while it is being worked on – 'encoded' or 'transformed'. For example, visual information such as written material has to be encoded or transformed into phonological and linguistic information so that the reader can make sense of and remember it. It is assumed to be held in working memory by a process of rehearsal and is thought to have a half-life of 10-15 seconds.

If the processing of information in working memory is interrupted, or if the pupil has an inefficient working memory system, he/she will not be able to hold the information long enough to process and transfer the information to the long term store or they may process the information inefficiently. Sequential information is thought to be particularly vulnerable to inefficient processing. This causes problems with the storage and recall of new information. This means that pupils can suffer from information overload and require repetition, consolidation and over-learning to achieve the same levels of understanding as their peers who do not have dyslexia. This can also mean they are poor at associative learning, i.e. learning new information by associating it with something that was previously learned.

· **Rapid naming**

Rapid naming refers to the ability to quickly and efficiently retrieve information from long term memory. In school, many pupils experience blocks or delays in retrieving information. For example, accuracy in word recognition while reading text is dependent among other things on efficient rapid naming. Problems may result in a pupil knowing a word on one line of a page, yet failing to seem to recognise the same word on the next line. The pupil may be able to stop and decode the word, but the instant identification of the word that fluent reading demands is not always there.

There may also be a timing problem. This involves a reduced capacity for processing rapid successive information which may compromise the development of oral and written language. As a pupil listens to a continuous speech stream, he or she must segment the acoustic signal into chunks that represent the phonemes of language, and access those phonemes rapidly and automatically.

· **Automaticity**

Many pupils with dyslexia experience difficulty with the automatisation of skills. They may experience difficulty in learning any task to an automatic level but experience particular difficulties in the area of written language. For example, at a young age, children are drilled in the formation of letters until

they can write them without thinking. Individuals with dyslexia may never reach this level of automaticity and, despite the fact that they have progressed in school and are writing complicated text, may still be burdened with having to think consciously about the formation of certain letters to get them right. When preoccupied with expression, they may make significant errors in letter formation – for example, writing some letters backwards or even upside down or perhaps writing the wrong letter.

Similarly difficulties with automaticity imply that a pupil with dyslexia may not readily consolidate new learning and may therefore find it difficult to change inappropriate learning habits. Some pupils who have difficulty in acquiring automaticity may be able to mask their difficulty by working harder. Problems with automaticity, however, will still be noted in situations where compensation is not possible. These pupils need to invest a large amount of attention in a task and if a second task interferes, they will not be able to perform the first task.

4. Difficulties in organisation, sequencing and motor skills may also be present.

· Organisation

· Sequencing

· Motor skills

Information processing difficulties may also result in the widely reported incidence of organisational and sequencing difficulties among pupils with dyslexia. This may be seen in a pupil not knowing the multiplication tables, the months of the year or even the alphabet in sequential order and in easily forgetting telephone numbers or page numbers or in confusing sequential instructions. Dyslexia may also affect other areas of development such as movement and balance as well as the acquisition of language skills. Several studies have reported on the fine motor and gross motor difficulties experienced by pupils with dyslexia.

5. Learning difficulties arising from dyslexia occur across the lifespan, and may manifest themselves in different ways at different ages.

· While often only associated with school-aged children, dyslexia is part of being human and an individual affected will continue to show characteristics beyond the school years. Dyslexia carries through into later life, irrespective of how successful the individual has become in acquiring literacy skills.

6. Learning difficulties arising from dyslexia may co-exist with difficulties in the area of number.

· As linguistic and mathematical abilities are dealt with in the same area of the brain and as much of mathematics itself is language-based including its own set of visual symbols, it is not surprising that some learners with dyslexia experience some difficulties in the area of number. However, despite these difficulties, their actual level of conceptual understanding is more related to their overall level of general ability.

7. Learning difficulties arising from dyslexia may be associated with early spoken language difficulties.

· There is a great deal of evidence linking dyslexia to spoken language disorders. Many studies have shown that poor readers do not perform as well as good readers on spoken language measures. More significantly, longitudinal studies have shown that a poor performance on spoken language

measures is moderately predictive of later difficulties in learning to read and in reading itself. People with dyslexia frequently have a history of early language difficulties. Many were referred and attended therapy for speech and language difficulties during their early life. Children with dyslexia experience a significant difficulty in associating spoken language with written language.

8. Learning difficulties arising from dyslexia may be alleviated by appropriate intervention.

· The Task Force / Task Group definition of dyslexia implies that it is a heterogeneous condition, both within and across individuals. Intra-individual differences involve varied profiles of learning abilities and disabilities. The identification of the individual's profile should lead to a specific choice from a variety of teaching and non-teaching interventions that are most appropriate to the individual's needs and circumstances. In this way, dyslexia can be overcome.

· There appears to be no proven 'one best method' to intervene. While it is common practice for schools (and some adult literacy programmes) to adopt a single method for teaching reading, with the assumption that it will be effective for everyone, research indicates that some learners need a multisensory phonics approach, with instruction in phonological awareness; others need a more meaning-based approach; still others need interventions to address comprehension problems. For many a combination of approaches is required.

9. Learning difficulties arising from dyslexia may occur in all socio-economic circumstances.

· One of the great myths about dyslexia is that it is a 'middle-class' disease'. Dyslexia, of course, is not a disease and it is only one of the many reasons why a pupil may have difficulties in school. Adverse socio-economic circumstances, also known as 'disadvantageness', can also be an important factor in learning. When children are disadvantaged by their social or economic circumstances, it may be more difficult to recognise that dyslexia may also be a factor in their learning difficulty. Socio-economic conditions do not cause dyslexia, but the two can co-exist. *Dyslexia may increase or reduce in severity depending on environmental factors.*

10. Learning difficulties arising from dyslexia may co-exist with other learning difficulties such as Attention Deficit Disorder, and may or may not represent a primary difficulty.

· Frequently children with dyslexia experience other conditions which may or may not also affect learning. As well as Attention Deficit Disorder, these conditions include Hyperactivity and Dyspraxia. It is important to note, however, that these conditions exist independently of dyslexia and do not cause it. Reports on the co-occurrence of dyslexia with other difficulties suggest that it is often difficult, if not impossible, to provide a clear explanation of the learning difficulties experienced by some children.
